

COMMONWEALTH OF VIRGINIA

Emergency Operations Plan



Radiological Emergency Response Plan

Volume III

Virginia Department of Emergency Management

September 2010

**Commonwealth of Virginia Emergency Operations Plan
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RECORD OF CHANGES

Change Number	Effective Date	Description of Change	Page Number	Initials
1	9/1/2010	Plan updated to reflect After Action Report items identified from VOPEX 2008-2010 exercises. Technical data removed from the plan and a separate technical support document created.	All	BMS

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I. INTRODUCTION

The Commonwealth of Virginia Radiological Emergency Response Plan, Volume III, is a hazard-specific incident annex to the Commonwealth of Virginia Emergency Operations Plan (*COVEOP*) and represents a summary of the Radiological Emergency Response Technical Support Document. This plan has been developed to provide a basis for radiological emergency preparedness and to establish the organizational framework and operational concepts and procedures designed to minimize the loss of life and property and to expedite the restoration of essential services following a radiological emergency.

Emergency duties and responsibilities have been assigned to agencies in coordination with the COVEOP.

II. Assumptions

- A. Each local government within the Commonwealth is responsible for maintaining the capability to implement its Radiological Emergency Response Plan.
- B. Each local government within the Commonwealth is responsible for participating in periodic training to exercise its Radiological Emergency Response Plan.

III. PURPOSE

- A. The Technical Support Document (which has restricted access) provides in detail the State organization for direction and control of emergency operations in events that could include:
 - 1. A radiological emergency at a fixed nuclear facility.
 - 2. Other radiological emergencies, to include those caused by a transportation accident involving radiological materials.
 - 3. Terrorist events involving radiological materials.
 - 4. A radiological emergency involving a Naval Nuclear Propulsion Program (NNPP) facility or ship.

Requests to access the Technical Support Document should be directed to the Radiological Planning Branch at (804) 897-6500.

- B. The Technical Support Document also addresses the following:
 - 1. Provides mechanisms to warn the public and for implementation of protective actions to be taken during a radiological emergency.
 - 2. Provides guidance to state agencies and political subdivisions for emergency preparedness and operational responsibilities for a radiological emergency to minimize radiation exposure and environmental contamination.

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3. Provides a basis for preparation of detailed Radiological Emergency Response Plans, procedures, and training programs for state agencies and political subdivisions.

III. MISSION

- A. The mission of the Commonwealth of Virginia is to plan, prepare for and conduct emergency operations in response to radiological emergencies at fixed nuclear facilities, NNPP facilities and ships, and transportation accidents involving radioactive materials.
- B. The mission of Commonwealth of Virginia political subdivisions is to develop plans and prepare for radiological emergency response in accordance with this Plan, and the Radiological Emergency Response Technical Support Document. This applies particularly for those residing within the emergency planning zones of fixed nuclear power stations and fuel fabrication plants. Special emergency response plans are not necessary for subdivisions within NNPP designated Areas of Planning Attention. Existing civil emergency response plans in place for handling industrial and natural events (for example, chemical spills or hurricanes) are sufficient to protect the public in response to a radiological emergency involving a NNPP facility or ship.

IV. SCOPE

This Plan applies to off-site radiological emergencies caused by events at fixed nuclear facilities, NNPP facilities and ships, and to other radiological emergencies, to include transportation accidents and terrorist events involving radiological materials. The Plan:

- A. Assigns responsibilities to State agencies and local governments in radiological emergency response and preparedness.
- B. Sets forth guidance for reporting and disseminating warning of radiological emergencies.
- C. Specifies immediate response guidance for State and local governments to the four Nuclear Regulatory Commission (NRC)/Federal Emergency Management Agency (FEMA) defined emergency action levels.
- D. Delineates the policies and concepts under which the State and local governments will operate in radiological emergency response.

V. SITUATION

- A. Potential Sources of Radiological Emergencies
 1. The following fixed nuclear facilities are potential sources of radiological emergencies in Virginia.

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- a. Nuclear Power Station Reactors
 - (1) Surry Power Station, located on the James River in Surry County, is owned and operated by Dominion Generation, hereafter called Dominion. There are two pressurized water nuclear reactors in operation.
 - (2) North Anna Power Station, located on Lake Anna in Louisa County, is owned and operated by Dominion. There are two pressurized water nuclear reactors in operation.
 - (3) Calvert Cliffs Power Station, operated by Baltimore Gas and Electric Company, is located in Lusby, Maryland. There are two pressurized water nuclear reactors in operation. This site is about 22 miles from the Virginia border.
- 2. The following NNPP facilities and ships in the Greater Hampton Roads area are potential sources of radiological emergencies. More detailed information on NNPP facilities and ships is provided in Appendix 17 of the Radiological Emergency Response Technical Support Document.
 - a. Naval Station Norfolk (NSN)

NSN, in Norfolk, is homeport to both nuclear-powered aircraft carriers and submarines. These nuclear-powered vessels are under the radiological regulatory authority of the NNPP - A joint program of the U.S. Navy and U.S. Department of Energy/National Nuclear Security Administration.
 - b. Norfolk Naval Shipyard, Portsmouth (NNSY)

Norfolk Naval Shipyard (NNSY) performs repair, overhaul, testing and decommissioning of naval nuclear-powered vessels. All nuclear-powered vessels and their support facilities at NNSY are under the radiological regulatory authority of the NNPP, a joint program of the U.S. Navy and U.S. Department of Energy/National Nuclear Security Administration.
 - c. Northrop Grumman Newport News Shipyard, Newport News (NGNN)

NGNN performs repair, overhaul, testing, new construction, and decommissioning of naval nuclear-powered vessels on the James River in Newport News, Virginia. All nuclear-powered vessels and their support facilities at NGNN are under the radiological regulatory authority of the NNPP, a joint program of the U.S. Navy and U.S. Department of Energy/National Nuclear Security Administration.
- 3. Transportation Accidents

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Shipment of radioactive materials within the State in support of fixed nuclear facilities, other users of radioactive materials, and Department of Defense facilities raises the possibility of radiological emergencies caused by transportation accidents. The primary mode of transporting radioactive materials is by truck, although shipments may occur by rail, ship, or aircraft.

4. Nuclear Weapon Accident

In a nuclear weapon accident, health and safety, public affairs, classified information security, and weapons recovery are the critical concerns facing response organizations. Other radiological emergency response aspects that must be addressed include medical assistance, security, logistics, legal implications, site restoration, communications, and response forces integration and coordination. Overall coordination of these operations will be managed by the Commonwealth of Virginia, Department of Emergency Management in conjunction with the lead or Coordinating Federal Agency (CFA).

5. Terrorist Events Involving Radiological Materials

A Radiological Dispersion Device (RDD) could spread radioactive material over a wide area requiring a sizeable cleanup. Such dispersion could contaminate people in the immediate vicinity, some of which would require medical treatment.

B. Nature of the Hazard

Radiation cannot be detected by the senses, awareness of the presence of radiation must rely on instrumentation to provide warning of a release. Radioactive materials released into the environment may enter the body by two broad pathways.

1. Plume Exposure Pathway

a. The principal exposure sources from this pathway are:

- (1) Whole body external exposure to gamma radiation from deposited material.
- (2) Inhalation exposure from the passing radioactive plume.

b. The duration of the release leading to potential exposure could range from one-half hour to several days. For the plume exposure pathway, evacuation would likely be the principal immediate protection action recommended for the general public. Sheltering would be considered for special populations, such as hospital patients and/or incarcerated inmates where evacuation represents a greater risk for either the individuals or the community.

2. Ingestion Exposure Pathway

The principal exposure from this pathway would be from ingestion of contaminated water or foods such as milk or fresh vegetables. The duration of potential exposure could range from hours to several months. Early protective actions to minimize exposure or subsequent contamination of milk and other supplies could include area monitoring to detect contamination and placing livestock on stored feed and protected sources of water.

C. Radiation Effects

1. Radiation-induced health hazards to humans may fall into two categories and vary depending on the magnitude of the exposure.

- a. Early Effects

Occurrence shortly after exposure to high doses of radiation may include nausea, fatigue, vomiting, diarrhea, loss of appetite, loss of hair, temporary sterility, and clinically-detectable changes such as chromosomal changes.

- b. Late Effects

These do not appear until years after exposure to radiation and may include somatic effects such as increased prenatal mortality or heredity defects in future generations. Cancer, including leukemia, has been clearly linked with exposure to ionizing radiation, and is likely the most important effect at absorbed doses below 100 rad. In general, one Rem whole body dose in a large population could result in a 0.04 percent increase in total cancer mortality. Fetal absorbed doses in excess of 10 rad during the period of 8 to 25 weeks may result in a decrease of intelligence quotient (IQ). Fetal absorbed doses in the range below 10 rad appear to present no substantial risk of fetal death, malformation or impairment of mental development. The lifetime risk of radiogenic induction of childhood cancer or leukemia at 10 rad is about 1 in 170.

2. Effects on animals, vegetation, or real estate are possible, but may be controlled or alleviated to the extent that decontamination is employed or the affected item is properly disposed.

D. Scope of Probable Radiological Emergencies

1. The Nuclear Regulatory Commission has defined two Emergency Planning Zones (EPZ's) for pre-planned emergency response actions surrounding fixed, commercial nuclear power stations.

a. Plume Exposure Pathway (or Ten-Mile Emergency Planning Zone)

A short-term plume exposure pathway EPZ of about a ten-mile radius surrounding the facility. The size of this EPZ is based on the following considerations:

- (1) Projected doses from the traditional design basis accident would not exceed the protective action guide levels outside of the zone.
- (2) Projected doses from most core melt sequences would not exceed protective action guide levels outside of the zone.
- (3) For the worst core melt sequences, immediate life-threatening doses would generally not occur outside of the zone.
- (4) Detailed planning within ten miles would provide a substantial base for expansion of response efforts in the event that this proved necessary.
- (5) The NRC/EPA Task Force has concluded that it would be unlikely that any protective actions for the plume exposure pathway would be required beyond this distance. Also, the Task Force concluded that the ten-mile plume exposure pathway EPZ is of sufficient size for actions within this zone to provide for substantial reduction in early severe health effects (injuries or death) in the event of the worse case core melt accident.

b. Ingestion Exposure Pathway (or 50-Mile Emergency Planning Zone)

A longer-term ingestion exposure pathway EPZ of about a 50-mile radius surrounding the facility. The size of this EPZ is based on the following considerations:

- (1) The downwind range within which significant contamination could occur would generally be limited to about 50 miles from a commercial nuclear power station because of wind shifts during the release and travel periods.
- (2) There may be conversion of atmospheric-suspended iodine to chemical forms that do not readily enter the ingestion pathway.
- (3) Much of any particulate material in a radioactive plume would have been deposited on the ground within 50 miles of the facility.

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- (4) The likelihood of exceeding ingestion pathway protective action guide levels at 50 miles is comparable to the likelihood of exceeding plume exposure pathway protective action guide levels at 10 miles.

c. Emergency Planning Zones for Other Nuclear Facilities

Other fixed nuclear facilities located within the State are of much lower power or have much lower radioactive inventories than fixed commercial nuclear power stations. These features tend to reduce the consequences of accidents at these facilities. Except for the size of the protective action zones, state, local, and facility planning and response to accidents, which could occur at these facilities, will be the same as for commercial nuclear power stations.

d. Naval Nuclear Propulsion Program Facilities and Ships

Because of differences in design and operation, EPZ's are not applicable to naval nuclear propulsion plants. Instead, a 0.5 statute mile Area of Planning Attention from the ship has been established in place of the 10-mile plume exposure pathway EPZ. Similarly, the 50-mile ingestion exposure EPZ is not applicable to naval nuclear propulsion plants.

2. Time Factors Associated with Release

The range of times between the onset of accident conditions and the start of a major release is of the order of one-half hour to several hours. The subsequent time period over which radioactive material may be expected to be released is of the order of one-half hour (short-term release) to a few days (continuous release). The table below summarizes the guidance on time of the release.

Guidance on Initiation and Duration of Release

Time from initiating event to start of atmospheric release.	0.5 hour to 1 day.
Time period over which radioactive material may be continuously released.	0.5 hour to several days.
Time at which major portion of release may occur.	0.5 hour to 1 day after start of release.
Travel time for release exposure point (time after release).	5 miles - 0.5-2 hrs. 10 miles -1 hour

E. Protection Against the Hazard.

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1. The projected dose a person at any point might receive is dependent, among other factors, upon:
 - a. The quantity and the isotopic and chemical composition of the radioactive material released.
 - b. The distance the person is from the source or release point.
 - c. The length of time exposed to the radiation.
 - d. Protective material placed between a person and the source or release point.
 - e. Atmospheric conditions, to include wind speed and direction.
2. Protective measures could include:
 - a. Evacuation.
 - b. Shelter and relocation.
 - c. Access control.
 - d. Pasture and feed control for animals.
 - e. Control of milk.
 - f. Food and water control.
 - g. Decontamination.
 - h. Respiratory protection for emergency workers.
 - i. Use of radio-protective drugs (stable iodine to reduce radioactive iodine in the thyroid).
3. The most urgent action in terms of response time after a radiological emergency caused by an airborne release of radioactive materials at a nuclear facility is to protect people from inhalation of radioactive materials and from direct whole body exposure to gamma radiation. Early follow-on action is also required to reduce exposure through the ingestion pathway. One or several of the protective measures (E.2. above) may be taken to avoid or reduce the projected dose. The goal is maximum protection of the public with the least cost and disruption.

VI. ORGANIZATION

- A. The nuclear facility or site operator plays a key role in on-site emergency response, damage control, accident assessment, warning, and public affairs.

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- B. The State organization for response to radiological emergencies is the same as for all response operations or protocols. It is based on normal governmental structures and channels of communication with the Governor in his role as Director of Emergency Management directing the response through the State Coordinator of Emergency Management.
- C. The State Coordinator of the Virginia Department of Emergency Management (VDEM) coordinates the overall response, and the Virginia Department of Health (VDH) through the Radiological Health Program (RHP) provides technical advice and assistance on radiological exposure control, and radiological monitoring.
- D. The VDEM State On-Scene Coordinator (SOSC) at the utility's Emergency Operations Facility (EOF) or other appropriate location will serve as the state's representative to provide the interface with the utility's Recovery Manager and to facilitate receipt and transmission of appropriate information between the utility, the state and local governments. Similarly, the SOSC will provide the interface with the Naval Nuclear Propulsion Program's local Emergency Control Center (ECC).
- E. Other State agencies provide support and assistance, on request, in accordance with their responsibilities and capabilities.
- F. The State organization will be supported by Federal response teams represented in the Virginia Emergency Operations Center (VEOC), EOF or ECC, and/or other appropriate locations. Additional Federal assistance may be obtained from or through the Department of Homeland Security (DHS), the Department of Energy (DOE), the Nuclear Regulatory Commission (NRC), and the Federal Emergency Management Agency (FEMA) through the VEOC.

VII. CONCEPT OF OPERATIONS AND PROCEDURES

A. Emergency Classification Levels

1. Emergency Classification Levels for Fixed Nuclear Facilities

- a. The following four classes of emergency classification levels have been established for the purpose of reporting and defining pre-planned actions to be taken in response to emergencies at fixed commercial nuclear facilities:

(1) Class: NOTIFICATION OF UNUSUAL EVENT

Unusual events are in process or have occurred that indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No release of radioactive material requiring off-site response or monitoring are

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expected unless further degradation of safety systems occurs. (Declaration of State of Emergency is not warranted).

(2) Class: ALERT

Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of hostile action. Any releases are expected to be limited to small fractions of the EPA Protective Action Guidelines exposure levels. (Declaration of State of Emergency is possibly warranted).

(3) Class: SITE AREA EMERGENCY

Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevent effective access to equipment needed for the protection of the public. Any releases are not expected to exceed EPA Protective Action Guidelines exposure levels except near site boundary. (Declaration of State of Emergency is possibly warranted).

(4) Class: GENERAL EMERGENCY

Events are in process or have occurred that involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guidelines exposure levels for more than immediate site area. (Declaration of State of Emergency is warranted).

- b. These classes of emergency classification levels could develop sequentially. However, the first indication of a problem could be at Site Area Emergency or General Emergency.
- c. The Recovery, Relocation and Reentry Phase will begin when the utility or facility operator terminates the Alert, Site Area Emergency or General Emergency Phase or when events at the site have been down-graded and conditions stabilized. Off-site radiological monitoring, assessment, and environmental sampling will be continued until terminated by the State Radiological Assessment Officer, VDH officials, and the State Coordinator, or when missions have been completed. State and local

government officials will continue to take whatever actions necessary to provide for the safety and economic well being of the population and to return impacted areas to normalcy.

2. Emergency Classification and Action Levels for NNPP Facilities and Ships

- a. NNPP uses the four classes of Emergency Action Levels (EALs) specified in NUREG-0654/FEMA-REP-1 which is primarily based on plant or site conditions (e.g., loss of offsite power, loss of one or more fission product barriers). Because of the differences in the design and operation of NNPP nuclear propulsion plants, the NRC/FEMA guidance is not applicable to NNPP nuclear propulsion plants.

The NNPP EALs are normally classified based on a conservative estimate of total radiation exposure to a hypothetical member of the public located near the Federal Government property boundary (or nearest public residence) in terms of dose to the whole body (i.e., Total Effective Dose Equivalent (TEDE)) or dose to the thyroid (Committed Dose Equivalent (CDE)) during the plume phase. The NNPP used the Protective Action Guides (PAGs) specified by the Environmental Protection Agency (EPA), in EPA 400-R-92-001 of October 1991, to establish the General Emergency threshold doses (1 Rem TEDE, 5 Rem CDE thyroid). The dose thresholds for the lower tier event classes (Site Emergency, Alert, and Unusual Event) were then established using fractions of the EPA PAGs.

(1) Class: UNUSUAL EVENT

Description: Unusual events are in progress or have occurred that indicate a potential degradation of the level of safety of the NNPP facility or ship. No releases of radioactive material requiring offsite response are expected unless further degradation of safety systems occurs. If minor releases of radioactivity off-site do occur, releases are expected to result in whole body radiation exposures of <0.01 Rem or thyroid exposures of <0.05 Rem at the Federal Government property boundary (or nearest public residence).

(2) Class: ALERT

Events are in progress or have occurred that involve an actual or potential substantial degradation of the level of safety of the NNPP facility or ship. Any releases are expected to be limited to small fractions of the EPA PAG exposure levels near the Federal Government property boundary (or nearest public residence). Radioactivity releases are expected to result in whole body radiation exposures of >0.01 to <0.10 Rem or thyroid exposures of >0.05 to <0.50 Rem at the Federal Government property boundary (or nearest public residence).

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(3) Class: SITE EMERGENCY

Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public. Any releases are not expected to exceed EPA PAG exposure levels beyond the Federal Government property boundary. Releases are expected to result in whole body radiation exposures of ≥ 0.1 to < 1.0 Rem or thyroid exposures of ≥ 0.5 to < 5 Rem at the Federal Government property boundary.

(4) Class: GENERAL EMERGENCY

Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be expected to exceed EPA PAG exposure levels near the Federal Government property boundary. Releases are expected to result in whole body radiation exposures ≥ 1.0 Rem or thyroid exposures of ≥ 5.0 Rem at the Federal Government property boundary.

- b. These classes of emergency classification levels could develop sequentially. However, the first indication of a problem could be Site Area Emergency or General Emergency
- c. The Recovery, Relocation and Reentry Phase will begin when the NNPP Emergency Control Center (ECC) terminates emergency phase or when events at the site have been down-graded and conditions stabilized. Off-site radiological monitoring, assessment, and environmental sampling will be continued until terminated by the State Radiological Assessment Officer, VDH officials, and the State Coordinator or when missions have been completed. State and local government officials will continue to take whatever actions necessary to provide for the safety and economic well being of the population and to return impacted areas to normalcy.

B. Accident Assessment

The initial assessment and report of an emergency classification level at a nuclear facility will be made by the facility operator, based on instrumentation within the facility control room. This initial assessment will include a projection of off-site consequences; and if indicated, immediate protective actions will be recommended to State and local government officials. This initial on-site assessment will be verified and refined as soon as possible and on a continuing basis by the RHP in cooperation with facility health physics personnel assessments. Recommendations will be based on on-site radiation monitoring, off-site reports provided by the local governments and the State Radiological Emergency Response Team (RERT), field units, and laboratory analyses. The initial assessment and report of an emergency classification

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level for radiological and reactor accidents involving NNPP facilities and ships will be made by the NNPP Area Commander.

C. Notification and Warning

1. The facility operator, or Area Commander for NNPP facilities and ships, will immediately notify the affected local governments and the Virginia EOC whenever any one of the four emergency classification levels has been reached at the facility. The initial notification will include the emergency classification, whether or not there has been a release of radioactive material, remarks and description of events.
2. When notified of a Notification of Unusual Event, Alert, Site Area Emergency, or General Emergency, the Virginia EOC and the local governments will first verify the report (if not received by "insta-phone" circuit system), and take actions as outlined in this plan and in local government Radiological Emergency Response Plans (RERPs). Subsequent reports need not be verified. The Virginia EOC will notify RHP, other State agencies assigned emergency tasks in this Plan, and the affected local governments as appropriate.
3. If a Site Area Emergency occurs at the North Anna Nuclear Power Station, the Maryland EOC will be notified by the Virginia EOC; and if a Site Area Emergency occurs at the Surry Power Station, the North Carolina EOC will be notified by the Virginia EOC. The Virginia EOC may notify affected adjacent states during an earlier phase, if warranted.
4. The local government EOC's or communications centers will notify local government officials and supporting organizations and carry out emergency responsibilities and implement procedures in accordance with the local government RERP's.

D. Concept of Operations

1. Accidents at Fixed Nuclear Facilities
 - a. Protective actions within the facility site boundary will be the responsibility of the operator. The State and neighboring local governments will provide on-site assistance as requested and as mutually agreed to with the facility operator.
 - b. The implementation of protective actions beyond the site boundary but within the ten-mile plume exposure EPZ and within the fifty-mile Ingestion Pathway Zone (IPZ) for commercial nuclear power stations is the primary responsibility of the elected officials of the local governments. As time may be a critical factor in providing protection against plume exposure, initial response is based on the implementation of preplanned actions outlined in the State and local government plans upon receipt of

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notification of a radiological incident at a fixed nuclear facility. Follow-up action will be taken on advice of the Virginia EOC based on the results of evaluation and assessment of the accident. Local Directors of Emergency Services, based upon knowledge of weather conditions, evacuation routes, special populations, predicted arrival of the radioactive plume, etc., may take independent and preemptive action to implement protective actions within their jurisdictions. Jurisdictions implementing preemptive local protective actions will ensure that the Virginia EOC and surrounding jurisdictions are fully informed of all actions and decisions.

Note: Under certain conditions, e.g., loss of communications with the State, local Directors of Emergency Services may institute protective actions, based solely on the recommendation of the nuclear facility.

- (1) VDEM will activate and coordinate implementation of the State Plan, to include assistance to local governments and coordination of emergency response actions of Federal and State agencies.
 - (2) VDH will implement procedures to determine actual off-site radiation distribution to refine the projected dose. Based on this assessment, the VDH will recommend protective actions to be taken. VDH will evaluate the radiological situation on a continuing basis from the time of initial notification until the radiological emergency is over. It will provide technical guidance and assistance relative to actions required, as indicated by the situation.
 - c. Radiation assessment and coordination of protective actions within the ingestion pathway EPZ will be the primary responsibility of the VDEM and VDH in cooperation with the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Environmental Quality (DEQ), Water Division.
 - d. VDH is responsible for the procurement, storage, and distribution of potassium iodide (KI). KI may be distributed to members of the general public and institutionalized persons as directed by the State Health Director.
2. Transportation Accidents Involving Radioactive Materials
- a. Radioactive materials may be transported within the State by any of four basic modes--air, water, highway, or railroad. The majority of radioactive materials, however, will move by motor vehicle over existing road nets.
 - b. Although the shipper and carrier bear the primary responsibility for assuring that radioactive materials are safely packaged and transported,

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responding to a transportation accident and subsequent consequences generally falls to state and local governments.

E. Evacuation During An Emergency

Under the provisions of Section §44-146.17 of the Commonwealth of Virginia Emergency Services and Disaster Law, the Governor may direct and compel evacuation of all or part of the populace from any stricken or threatened area if this action is deemed necessary for the preservation of life or other emergency mitigation, response or recovery; prescribe routes, modes of transportation and destination in connection with evacuation; and control ingress and egress at an emergency area, the movement of persons within the area and the occupancy of premises therein.

F. Immunity From Liability

In accordance with Section §44-146.23 of the Code of Virginia, (Commonwealth of Virginia Emergency Services and Disaster Law), "neither the State, nor any political subdivision thereof, nor Federal agencies, nor other public or private agencies, nor, except in cases of willful misconduct, public or private employees, nor representatives of any of them, engaged in any emergency management activities,... shall be liable for the death of, or any injury to, persons or damage to property as a result of such activities."

G. Direction and Control

At the local level, direction and control of radiological emergency response is the responsibility of the local Director of Emergency Services. At the State level, the Governor will direct the emergency response through the State Coordinator of Emergency Management who will coordinate implementation of the COVEOP that includes this document; Volume III Radiological Emergency Response Plan (RERP) as well as the Radiological Emergency Response Technical Support Document.

VIII. RESPONSIBILITIES

A. Responsibilities assigned to agencies of State government in radiological emergency preparedness and response are:

1. Agriculture and Consumer Services, Department of

- a. Obtain milk samples from dairy farms, meat samples from packing firms, and food samples from retail and wholesale establishments located within fifty miles of the nuclear power station, as requested, and provide them to the Division of Consolidated Laboratory Services for analysis.
- b. Coordinate the control and disposition of radiologically-contaminated food, milk, and animal feed.

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- c. Coordinate the provision of uncontaminated feed for dairy cattle and other farm animals, if required.
 - d. Coordinate the disposition of farm animals affected by radiological contamination.
 - e. Provide advice on and coordinate the disposition or use of farm crops, lands, and equipment that have been radiologically contaminated.
 - f. Assist the Department of Health in radiological monitoring and in obtaining samples for accident assessment.
 - g. Provide a decision-making official to the Virginia EOC.
- 2. Conservation and Recreation, Department of (Parks and Recreation Division)
 - a. For radiological emergencies at the Surry Power Station, warn and evacuate all personnel in the Chippokes Plantation State Park when notified of an emergency affecting the Park.
 - b. For radiological emergencies at the North Anna Power Station, warn and evacuate all personnel in the Lake Anna State Park; including individuals in watercraft on Lake Anna, when notified of an emergency affecting the Park.
 - c. For radiological emergencies at North Anna Power Station, evacuate plant personnel across Lake Anna.
 - d. Provide a decision-making official at the agency office to be in continuous contact with the Virginia EOC.
- 3. Consolidated Laboratory Services, Division of (Department of General Services)
 - a. Provide emergency laboratory services to State agencies and political subdivisions as required.
 - b. Provide a decision-making official at the agency office to be in continuous contact with the Virginia EOC.
- 4. Corrections, Department of
 - a. Provide emergency clothing (shirts and trousers) for temporary use by individuals who are contaminated when arriving at the Evacuation Assembly Centers.

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- b. Provide emergency bedding (including mattresses and blankets) for temporary use by individuals who will be staying at Evacuation Assembly Centers or shelters.
 - c. Provide vehicular back-up support from Department of Corrections Central Garage Car Pool.
 - d. Provide back-up communications to support emergency response activities.
 - e. Provide a decision-making official at the agency office to be in continuous contact with the Virginia EOC.
- 5. Emergency Management, Department of
 - a. Operate the Virginia Emergency Operations Center (VEOC).
 - b. Provide a VDEM State On-Scene Coordinator to the EOF or the local Naval Nuclear Propulsion Program (NNPP) ECC.
 - c. Provide warning in coordination with the State Police and the operators of fixed nuclear facilities or the local NNPP ECC.
 - d. Provide emergency communications.
 - e. Coordinate emergency response actions of Federal and State agencies.
 - f. Notify the following in accordance with Radiological Emergency Response Technical Support Document and VEOC SOP.
 - i. Virginia Department of Rail and Public Transportation of a radiological emergency at the North Anna Power Station or the Surry Power Station.
 - ii. State Bureau of Radiological Health immediately of all classes of accidents and incidents reported by operators of nuclear facilities.
 - iii. Department of Transportation of radiological accidents at the Surry Power Station.
 - iv. All other State agencies and support organizations that have emergency task assignments identified in the State RERP.

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- v. State of Maryland EOC of radiological accidents at the North Anna Power Station that result in either a Site Area Emergency or General Emergency.
 - vi. Notify the State of North Carolina EOC of radiological accidents at the Surry Power Station that result in either a Site Area Emergency or General Emergency.
 - vii. Notify the Federal Emergency Management Agency (FEMA) when the emergency classification level at a nuclear power facility or at a NNPP facility is classed as an Alert or higher.
 - viii. Federal Aviation Administration air controllers at Richmond, Norfolk, or Newport News-Williamsburg International Airports.
 - ix. Commander, Fifth U.S. Coast Guard District, Norfolk Naval Shipyard, Norfolk Naval Station, or Northrop Grumman Newport News Shipyard, of a radiological emergency at the Surry Power Station.
 - x. Fort Eustis of a radiological emergency at Surry Power Station that could affect the health and safety of personnel stationed at that installation.
 - g. Monitor the transportation of hazardous radioactive materials in Virginia.
 - h. Provide public information, assisted by the Department of Health and the nuclear facility operator; maintain and keep current a list of media representatives, including names and telephone numbers.
 - i. Request assistance from the Federal government in accordance with the National Response Framework.
 - j. Provide regional Hazmat assistance to local subdivisions and governments for radiological monitoring when requests are received through the state EOC.
6. Environmental Quality, Department of
- a. Conduct and provide air quality monitoring data and analysis from existing air monitoring network to the Department of Health and Department of Emergency Management as requested.
 - b. Provide assistance in collection and analysis of meteorological data.
 - c. Collect water samples from rivers and lakes located within the ingestion pathway EPZ for assessment.*

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- d. Collect fish samples from waters adjacent to the nuclear facility for assessment.*
- e. Assist the State Department of Health in radiological monitoring and accident assessment.*
- f. Provide a decision-making official at the agency office to be in continuous contact with the Virginia EOC.

* Actions performed in the EPZs will be contingent upon radiation levels being deemed acceptable to the general populous by qualified persons from the Bureau of Radiological Health and in accordance with limits established in Appendix 6 of the Radiological Emergency Response Technical Support Document.

7. Forestry, Department of

- a. Provide back-up communications to support emergency services activities for regional communications within the capability of the forestry network.
- b. Determine initial damage assessment for state-owned forests.

8. Game and Inland Fisheries, Department of

- a. Assist in collecting samples of wildlife and fish suspected of being radiologically contaminated for analysis by the State Department of Health.
- b. Provide back-up communications to support emergency response activities.
- c. Provide small boats with motors for administrative, logistical, and operational use of waterways contiguous to nuclear power stations.
- d. Assist the Department of Health in radiological monitoring and accident assessment.
- e. Provide a decision-making official at the agency office to be in continuous contact with the Virginia EOC.

In addition, for North Anna Power Station

- a. Assist in warning individuals in watercraft on Lake Anna in the vicinity of the North Anna Power Station.

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- b. Assist in traffic control of boats of Lake Anna in the vicinity of the North Anna Power Station.

In addition, for Surry Power Station

- a. Assist in traffic control of watercraft on the James River in the vicinity of the Surry Power Station.
- b. Assist in the evacuation of Surry Power Station personnel and other persons from Hog Island Wildlife Management Area, if necessary.
- c. Assist in warning persons in the Hog Island Wildlife Management Area in the vicinity of Surry Power Station.

9. Health, Department of

- a. Perform accident assessment, to include:
 - i. Provision the Radiological Emergency Response Team (RERT) for radiological assessment and response.
 - ii. Radiological assessment for:
 - (1) Determining actual off-site radiological consequences.
 - (2) Record keeping and documentation of off-site effects of the accident.
- b. Advise State and local officials on the implementation of pertinent protective actions based on accident assessment.
- c. Task other State agencies for providing radiological monitoring teams and furnishing appropriate protective clothing, dosimeters, and monitoring equipment.
- d. Establish radiological exposure control for:
 - i. State and local government radiological emergency response personnel.
 - ii. Other emergency response personnel.
 - iii. The affected populace.

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- e. Determine the availability of and coordinate the use of medical facilities that could accommodate and care for persons involved in a radiological emergency who may require medical care.
 - f. Provide other emergency health services.
 - g. Develop criteria for establishing controlled areas or zones surrounding an accident site, including ingress/egress control provisions and perimeter radiological surveillance of persons entering or leaving controlled zones within the plume and ingestion pathways.
 - h. Request and coordinate Federal assistance for monitoring and assessment provided under the National Response Framework and provide administrative and logistical support and liaison to Federal personnel on request.
 - i. Develop criteria for re-entry into homes and evacuated areas and advise local governments when these criteria have been met.
 - j. Develop and conduct, in coordination with the Department of Emergency Management, training programs for medical support personnel who may be called upon to care for off-site victims of a radiological accident and assist in conducting other radiological training programs.
 - k. Define hazardous radioactive materials and promulgate rules and regulations for their transportation within the Commonwealth.
 - l. Procure, store, and administer the issuance of potassium iodide.
 - m. Provide BRH Radiological Operations Officers and advisors and a decision-making official from the Division of Emergency Medical Services (EMS) to the Virginia EOC.
 - n. Provide additional radiological monitoring survey instruments to local field monitoring teams, as needed.
10. Marine Resources Commission
- In case of a radiological emergency at the Surry Power Station, provide boats and assist in warning and evacuation, as required.
11. Behavioral Health and Developmental Services, Department of
- a. Assure that the State facilities and community services boards are aware of their responsibilities in the event of a major disaster, participate in local emergency services planning activities, and have in place necessary procedures and plans for responding to major disasters.

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- b. Give direction to the State facilities, in the event of a major disaster, to implement their emergency preparedness plans, including cooperative efforts and evaluation and relocation, as required.
- c. Give direction to the State facilities, in the event of a major disaster, to establish liaison with State and local emergency management offices and to make their facilities available for relief assistance.
- d. Provide back-up assistance, on a standby basis, to those community services board staffs who are providing crisis intervention services during a major disaster.
- e. Crisis intervention services will be implemented according to provisions of the local emergency preparedness plan. The Department will, at the request of the community services board(s) in the disaster area, coordinate with other community services boards in unaffected areas of the State to send additional crisis intervention staff into the designated disaster area(s).
- f. Provide any additional assistance required by the State or local Office of Emergency Management within the capability of the Department, including on-site visits to assess service needs and the provision of needed technical assistance.

12. Military Affairs, Department of

- a. Assist in the evacuation of civilian personnel located within the affected radius of a nuclear facility.
- b. Provide air and ground transportation to assist in evacuation of civilians or for administrative or logistics support.
- c. Provide equipment, supplies, and services within its capability in response to a radiological accident.
- d. Assist State and local law enforcement authorities with traffic control, establishing roadblocks, and providing security to property when evacuation of civilians is ordered.
- e. Establish back-up communication nets in the operational area.
- f. Conduct radiological monitoring and decontamination.
- g. Provide a decision-making official to the Virginia EOC.

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13. Motor Vehicles, Department of
 - a. Support the Virginia State Police with personnel with arrest authority.
 - b. Provide receptionist and registration personnel for Disaster Application Centers.
 - c. Provide relief support personnel, as requested and available, for operation of computer networks and other emergency response needs.
14. Social Services, Department of
 - a. Assist local governments in caring for people evacuated from their homes.
 - b. Provide emergency financial assistance to the unemployed as a result of a radiological accident by providing general relief or other available funds.
 - c. Provide food stamps to applicants who qualify as a result of a radiological emergency.
 - d. Request and coordinate the assistance provided by quasi-government and volunteer relief organizations (Red Cross and Salvation Army) in accordance with the procedures outlined in the Red Cross Emergency Response Plan for Peacetime Radiological Emergencies/Nuclear Accidents.
 - e. Provide a decision-making official to the Virginia EOC.
15. Virginia State Police
 - a. Assist local officials in disseminating warning messages.
 - b. Assist in evacuation, in coordination with local officials.
 - c. Enforce access/egress provision in controlled areas, when established, in coordination with local officials.
 - d. Provide traffic control.
 - e. Conduct radiological monitoring of vehicles and personnel at traffic control points.
 - f. Provide a decision-making official to the Virginia EOC.
 - g. Assist Game and Inland Fisheries with warning of boaters on Lake Anna.

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16. Transportation, Virginia Department of

- a. Provide back-up communications to support emergency response activities.
- b. Barricade State-maintained roads in those areas affected by a Radiological Emergency.
- c. When advised by the Virginia EOC suspend operation of the Jamestown Ferry near the Surry Power Station, until the radiological condition warrants resumption of services.
- d. Provide a decision-making official to the Virginia EOC.

17. Virginia Cooperative Extension

- a. Provide advice to State and Local Officials on how to minimize losses to agricultural resources from radiation effects.
- b. Provide information and assistance to farmers and others to aid them in preparing for, and returning to normal after a radiological emergency.
- c. Conduct damage assessments in potentially affected areas and inform farmers, growers and producers of any actions which should be undertaken.
- d. Serve as a member of both the State and Local Food and Agriculture Council, and respond to both Local and State requests for help in preventing damage, assessing damage, and providing information to help recover from a disaster.

- B. State agencies who are assigned radiological emergency responsibilities will develop and keep current Standing Operating Procedures (SOPs) to assure a capability to fulfill their duties. Telephone numbers of key response personnel and maps should be updated at least quarterly and provided to the Virginia EOC.
- C. State agencies who are assigned radiological emergency responsibilities will participate in the annual VOPEX as necessary to assure a capability to fulfill their duties.

IX. EXECUTION

- A. This Plan is effective for execution upon notification of a radiological emergency within the State, and as a basis for training and preparation of supporting plans and procedures upon receipt.

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- B. State support to local governments and coordination of emergency operations in the event of a radiological emergency will be accomplished by selected State agencies and other support resources through VDEM.
- C. Plan Maintenance and Training
 - 1. The State Coordinator of Emergency Management will maintain, review, update and certify this Plan annually. Letters of Agreement will be reviewed a minimum of every two years, or sooner if needed.
 - 2. Responsible officials of State agencies and local government should recommend to the State Coordinator of Emergency Management, at any time, improvements and changes thereto which are appropriate.
 - 3. Training exercises of this Plan will be conducted annually with representatives of FEMA, NRC, and other interested Federal agencies invited to observe.
 - 4. Periodic training drills and exercises with NNPP sites are the responsibility of the Area Commander as specified by US Navy Directives.

AUTHORITIES AND REFERENCES

A. Authorities

1. Commonwealth of Virginia Emergency Services and Disaster Law of 2000
2. Radiation Control Act, Title 32.1, Chapter 6, Article 8, Code of Virginia

B. References

1. Title 10, Chapter 1, Code of Federal Regulations.
 - a. Part 20 - Standards for Protection Against Radiation.
 - b. Part 50 - Licensing of Production and Utilization Facilities.
 - c. Part 71 - Packaging of Radioactive Material for Transport and Transport of Radioactive Materials Under Certain Conditions.
 - d. Part 73 - Physical Protection of Plants and Materials.
2. Title 44, Chapter 1, Code of Federal Regulations.
 - a. Part 350 - Review and Approval of State and Local Radiological Emergency Plans and Preparedness.
 - b. Part 357 - Radiological Emergency Planning and Preparedness.
 - c. Part 352 - Commercial Nuclear Power Plants: Emergency Preparedness Planning.
3. NUREG-0654/FEMA-REP-1 - Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, U.S. Nuclear Regulatory Commission/Federal Emergency Management Agency, Revision 1, November 1980.
4. EPA 400-R-92-001 - Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, United States Environmental Protection Agency, May 1992.
5. Radiological Emergency Preparedness: Exercise Evaluation Methodology; Federal Emergency Management Agency, September 2001, Federal Register Notice.
6. Commonwealth of Virginia Emergency Operations Plan
7. National Response Framework
8. Nuclear Weapon Accident Response Procedures (NARP) Manual, Defense Nuclear Agency (DNA), September 1990.

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9. Department of Defense (DOD) Directive 5100.52, "DOD Response to An Accident or Significant Incident Involving Radioactive Materials," December 21, 1989.

The appendices and annexes listed below are contained in the Radiological Emergency Response Technical Support Document.

APPENDICES:

- 1 - Direction and Control
- 2 - Task Assignments
- 3 - Organization
- 4 - Notification and Warning
- 5 - Emergency Response
- 6 - Accident Assessment
- 7 - Radiological Exposure Control
- 8 - Agricultural Services
- 9 - Public Information
- 10 - Communications
- 11 - Decontamination and Re-Entry
- 12 - Emergency Highway Operations
- 13 - Training and Exercises
- 14 - Fixed Nuclear Facilities
- 15 - Transportation Accidents
- 16 - Nuclear Weapon Accident
- 17 - Naval Nuclear Propulsion Program Facilities and Ships
- 18 - Definitions

Annexes

- A. ESF #1 - Transportation
- B. ESF #2 - Communications
- C. ESF #3 - Public Works and Engineering
- D. ESF #4 - Firefighting
- E. ESF #5 - Emergency Management
- F. ESF #6 - Mass Care, Housing, and Human Services
- G. ESF #7 - Resource Support
- H. ESF #8 - Public Health and Medical Services
- I. ESF #9 - Search and Rescue
- J. ESF #10 - Oil and Hazardous Materials Response
- K. ESF #11 - Agriculture and Natural Resources
- L. ESF #12 - Energy
- M. ESF #13 - Public Safety and Security
- N. ESF #14 - Long Term Community Recovery
- O. ESF #15 - Public Information
- P. ESF #16 - Military Support
- Q. ESF #17 - Volunteer and Donations Management